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December 4, 2015

Environmental Protection Agency
Attention Docket No. EPA-HQ-OAR-2010-0505
1200 Pennsylvania Ave. NW
Washington D.C. 20406

Submitted via US Mail, e-mail, and the Federal eRulemaking Portal

Subject: **Docket ID No. EPA-HQ-OAR-2010-0505;** Comments on Oil and Natural Gas Sector: Emission Standards for New and Modified Sources (Federal Register, Vol. 80, No. 181, September 18, 2015)

Dear Sir or Madam:

ConocoPhillips Alaska, Inc. (CPAI) is pleased to submit these comments on the above referenced proposed new source performance standards (40 CFR 60, Subpart OOOOa). CPAI produces oil from both the Kuparuk and Alpine oil fields and has equity interest in the Prudhoe Bay oil field. As such, we are the largest producer of oil in Alaska so have a very significant interest in the proposed OOOOa rule.

CPAI supports the comments submitted by the American Petroleum Institute (API). CPAI submits this separate letter to focus on issues specific to the Arctic conditions that affect North Slope oil field operations. The EPA has acknowledged in prior rulemaking processes that Leak Detection and Repair (LDAR) requirements should not be applied to the North Slope because the balance of feasibility, benefit, and cost is different under Arctic conditions. For similar reasons CPAI asks EPA to exempt North Slope operations from the LDAR requirements of the proposed OOOOa rule.

The reasons for an exemption are set forth fully in the attached detailed comments, and can be summarized as follows:

- The technology required does not always reliably work finding methane leaks under the prevailing conditions on the North Slope.
- The prescriptive schedule for methane leak detection and repairs of the LDAR requirements in the proposed OOOOa imposes a greater burden on the North Slope compared to non-Arctic locations. The extreme and lengthy winter weather conditions and remote nature of the North Slope along with the logistical difficulties presented by both make the leak detection schedules and repair timelines frequently untenable.
- The shutdowns that may be required to fix some leaks could result in millions of dollars per day in lost gross revenue, which would deprive the State of Alaska from its main revenue source and dramatically affect other stakeholders.
- All above-ground piping and valves in oil production service are required by the State of Alaska to be visually inspected at least once per month for leaks. This means that personnel inspect

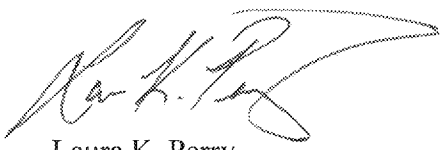
equipment for leaks from the wellhead all the way into the processing facilities for leaks. Piping containing production fluids, whether liquid or gas, is all above ground on the North Slope, except for the unflanged piping that must cross roads and pads.

- Alaska North Slope processing facilities are manned 24 hours per day, 7 days per week, and 365 days per year. Alaska North Slope drill sites are visited daily, weather permitting. Practices are in place to detect and repair leaks at processing facilities and drill sites.
- Because most of the flanged oil production equipment is enclosed and in containment, methane leaks cannot be generally tolerated on the North Slope.

In short, the goals of a methane leak detection and repair program are not going unaddressed on the North Slope as evidenced by the leak detection and repair program already in place that is adapted to the North Slope conditions. These prescriptive rules are not consistent with that existing program, however, and CPAI believes that if the existing program was substituted with the leak detection and repair program in the proposed OOOOa rules, it would be a step backward. CPAI's detailed comments, along with background information, are enclosed with this letter. Our comments include requests for clarification of some phrases used by EPA in the proposed rule.

Thank you for this opportunity to comment and please do not hesitate to call me if you have any questions or need more information to support our comments.

Respectfully,



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Docket ID No. EPA-HQ-OAR-2010-0505
Comments on Oil and Natural Gas Sector: Emission Standards for New and Modified Sources
(Federal Register, Vol. 80, No. 181, September 18, 2015)
ConocoPhillips Alaska, Inc. (CPAI)

Alaska's North Slope – its Climate and Meteorological Impacts on Logistics

The North Slope of Alaska is the area between the Brooks Range and the Arctic Ocean. It is entirely above the Arctic Circle and is located about 400 miles north of the closest major population center, Fairbanks. There is one road that connects this population center to some North Slope oil fields while other North Slope oil fields have no road connection at all. Thus, the primary access to the North Slope for workers is by air. These road and air connections to our major support centers are characterized by frequent interruptions due to spring breakup related flooding and weather-grounded flights, the former of which can last for weeks.[1] As such, schedule adaptation is a frequent necessity, project delays are not uncommon, and personnel have learned to be resilient in their transportation expectations. During the periods when they are physically on the North Slope, workers face additional challenges.

The climate of the North Slope is harsh, marked by persistently low wintertime temperatures, consistent winds, and a sun that remains below the horizon for about two full months per year. North Slope-specific weather data, collected just south of the Alpine field, shows that for about five months of the year, the average temperature is below 0°F (Figure 1).

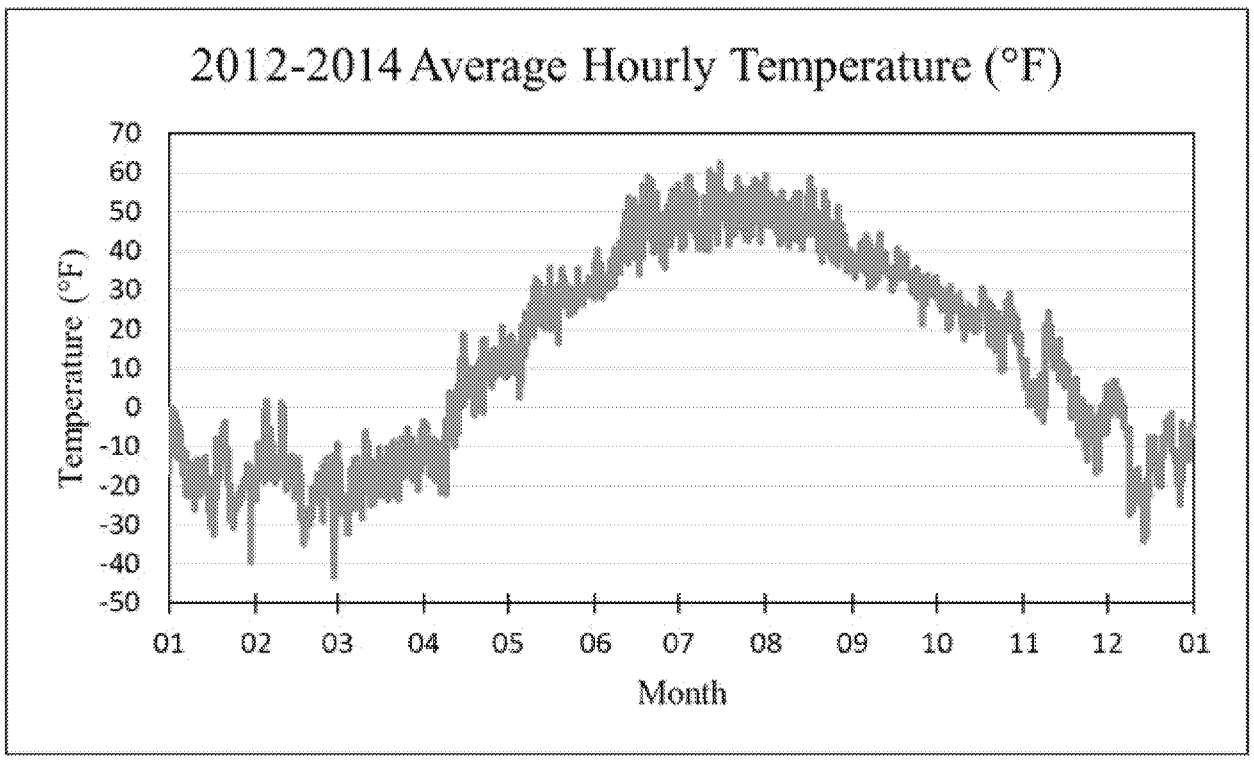

Figure 1: 2012-2014 Average Hourly Temperature (°F), Nuiqsut, AK

[1] See, for example, the interruption that occurred in early 2015 due to Dalton Highway flooding: http://gov.alaska.gov/Walker/press-room/full-press-release.html?pr=7185

Related, snow is typically on the ground on the North Slope from about September to June each year.[2] This is important because, as can be seen in Figure 2, winds in excess of 10 miles per hour occur more than 40% of the year causing periods of blowing snow and reduced visibility. This can frequently result in what is referred to on the North Slope as "phase" conditions,[3] where the oil industry implements ground travel restrictions for the purpose of safety. Phase conditions can occur on more than 30% of the days in the months October to May.

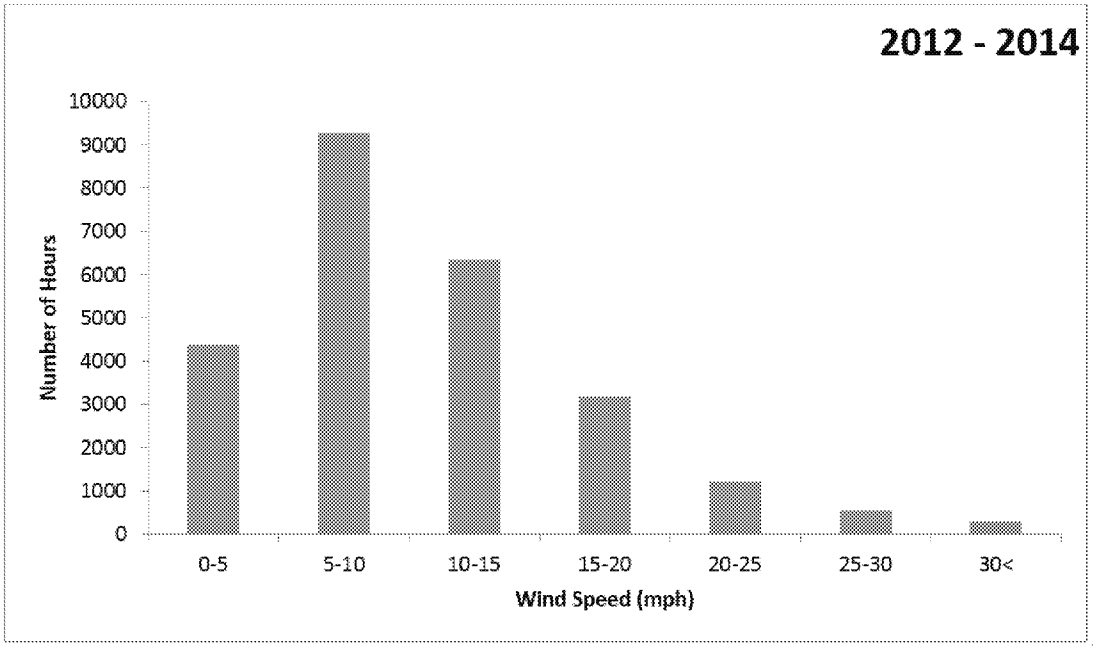

Figure 2: Nuiqsut Wind Speed Histograms; note wind speeds in excess of 10 mph for 11,596 hours of the 26,304 hours covering the three-year period

From the above, it is relatively easy to see that the North Slope winters are indeed harsh. The shoulder seasons also have their challenges given the intense pressure gradients seen in the fall with the onset of winter[4] and the aforementioned issues associated with spring breakup such as the Dalton Highway flooding. But the short summer season also has its challenges.

Figure 3 below[5] shows the amount of time the main airport into the North Slope oil fields, Deadhorse (PASC), was subject to various flight rules based on meteorological conditions between 1973 and 2007. Of note, during the months June through September, the airport was subject to low instrumental flight rules (LIFR) or very low instrumental flight rules (VLIFR) slightly more than 20% of the time. VLIFR accounted for about 1/3rd to 1/4th that amount of time. LIFR applies to conditions where cloud ceilings are less than 1,000 feet and visibility is less than 1 mile. VLIFR applies to conditions where cloud ceilings are less than 500 feet and visibility is less than ½ mile.

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[2] Shulski, M., Wendler, G.; 2007, The Climate of Alaska, University of Alaska Press, page 74

[3] In Phase I conditions (visibility < 500 feet, snowdrifts forming), only essential travel may occur. In Phase II conditions (visibility <250 feet, snowdrifts narrow the traffic lanes to less than the width of two pickup trucks), travel may occur only in convoys. In Phase III conditions (visibility <100 feet, snowdrifts impenetrable by pickups), travel is generally prohibited except for emergencies.

[4] Shulski, et al, pages 103-105

[5] From MVFR/IFR Climatology for Selected Alaska TAF Sites available at: http://www.atmos.albany.edu/student/ccastell/research/MVFR-IFR-Climatology-Report.pdf

The Federal Aviation Administration identifies VLIFR conditions as a criterion for closing airports.[6]

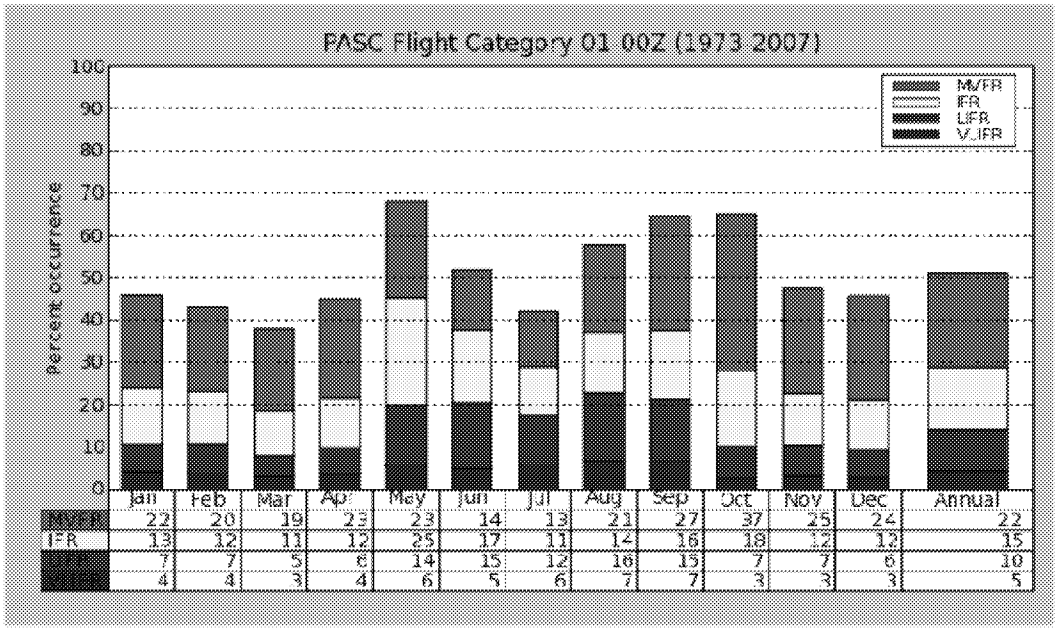

Figure 3: Deadhorse Airport Flight Categories, 1973-2007

For comparison, Figure 4 is the corresponding plot for the Ted Stevens Anchorage International Airport (PANC). Note that the flight challenges are so different for the two that they are plotted on different scales.

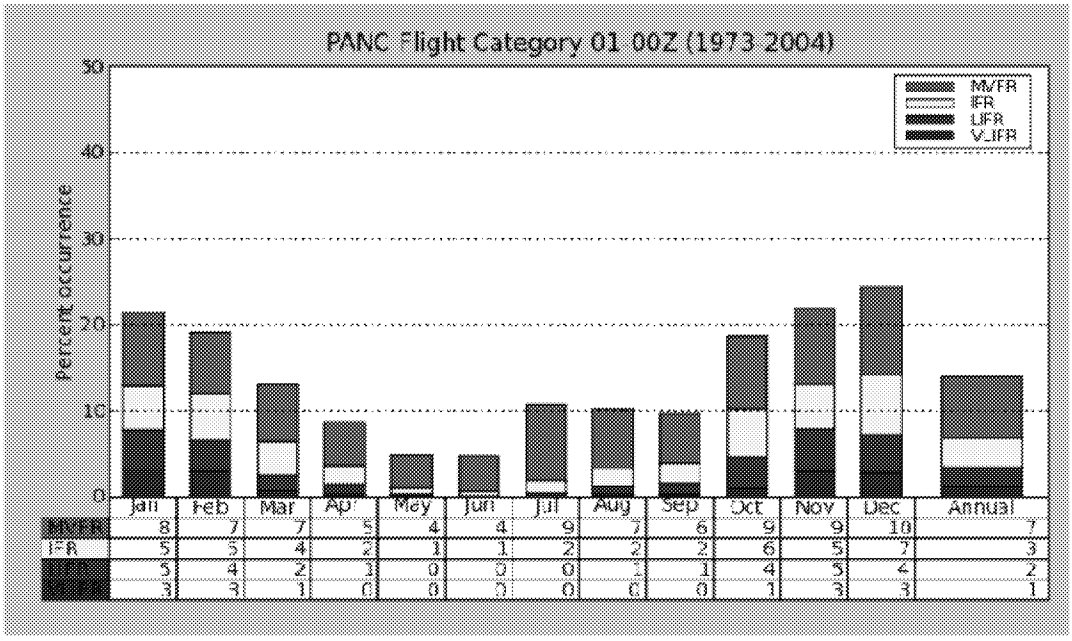

Figure 4: Anchorage Airport Flight Categories, 1973-2004

[6] Ibid., page 5

To summarize, climatic and meteorological conditions on Alaska's North Slope are such that, no matter the season, the best made plans have to be flexible in their scheduling and that delays in achieving goals are quite often inevitable. In 2013 and 2014, North Slope flights using Boeing 737 jet aircraft were delayed an average of more than once per week. Flights to the satellite fields using smaller aircraft from the Deadhorse hub are similarly challenged. Each delay has a "daisy-chain" effect on subsequent flights so schedule recovery can take time. The weather on the North Slope and the effect it has on logistics must be taken into account when crafting rules with tight schedules for compliance. In addition, as explained elsewhere in these comments, the North Slope weather can also force limitations on the technology associated with an LDAR program.

Oil Production on the North Slope of Alaska

Figure 5 is a conceptual overview of North Slope operations. There are multiple drill sites which are connected via multi-phase pipelines (containing oil, water, and gas) to a central processing facility. Separation of the produced fluids occurs at the central processing facility, not at the drill site. Figure 6, a map depicting the layout of the drill sites that feed into Kuparuk's Central Processing Facility No. 3 (CPF3), is typical of North Slope oil production operations. Figures 7 and 8 are aerial photographs of CPF2 and a typical drill site.

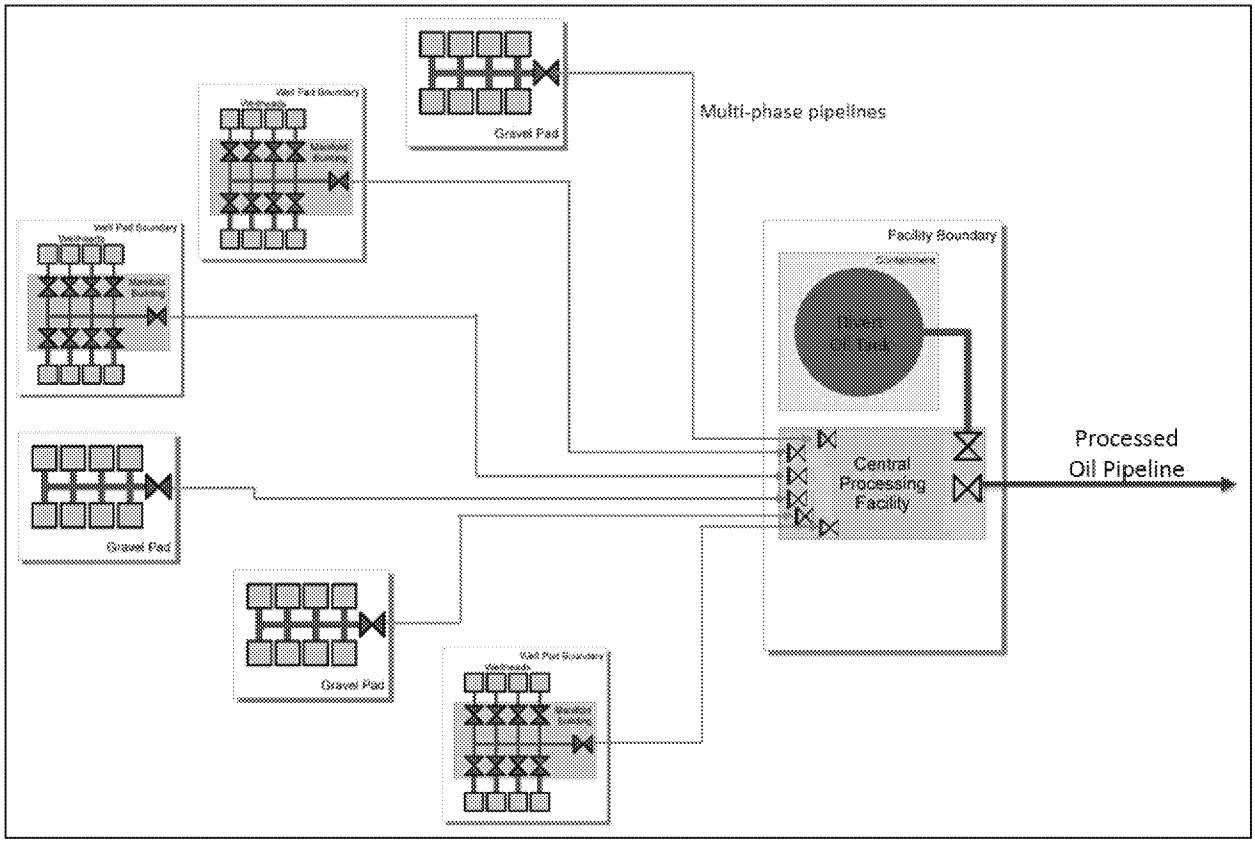

Figure 5: Simplified diagram of North Slope oil production facility

A drill site (of which six are depicted above), consists of the wellheads (anywhere from 10 to more than 70) which are enclosed in small well houses, manifold buildings where each individual well's production is commingled into a common pipe flowing from the gravel pad toward the processing facility, sometimes a production heater to prevent produced water from freezing, metering, and

tanks that store materials that are not produced fluids (e.g., methanol for well freeze protect[7]). In Kuparuk and Alpine, there are more than 50 drill sites containing over 1,700 wells.[8] Except when wells are being completed or having maintenance performed on them, there is no active fluid separation at the drill sites. During normal production operations, all fluids separation occurs at the processing facilities.

At the centralized processing facilities, produced sales quality crude oil is not stored as one might find in the tank batteries common in the Lower 48 states. The produced sales quality oil is piped directly from the processing facility to Pump Station 1, the beginning of the TransAlaska Pipeline System (TAPS), where the oil is piped to Valdez, AK for shipment. There are large divert oil tanks (approximately 55,000 bbl each) at some facilities. These divert tanks are used for emergency situations (e.g. when a pump station unexpectedly shuts down and cannot accept oil). During such a time, the produced oil will accumulate in these tanks and they will be emptied back into the pipeline when normal operations resume. A small amount of oil (approximately 10% or less by volume) may occupy these tanks at any given time, however this oil is cycled out of the tank either on a weekly or monthly basis, depending on the tank. These tanks are equipped with a vapor recovery system.

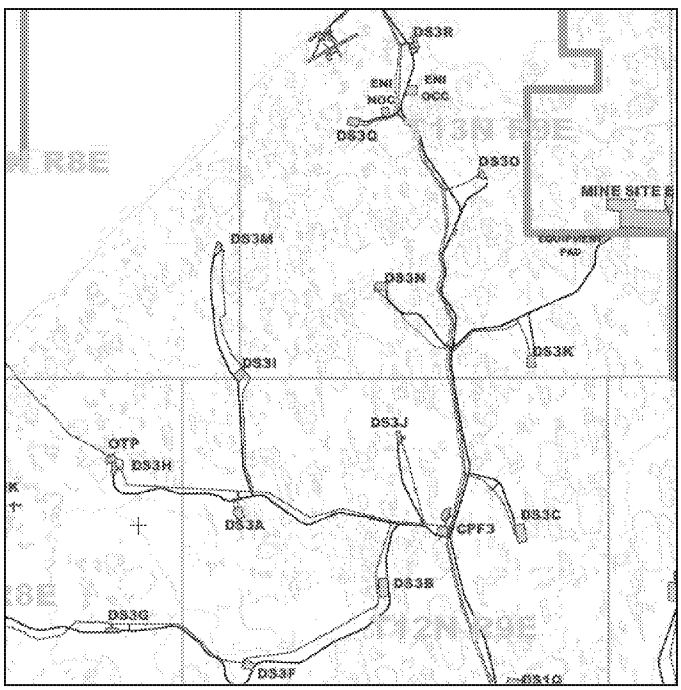

Figure 6: Map of Kuparuk's CPF3

The processing facilities receive all the produced fluids from a drill site, separate them into their water, gas, and oil phases, and route the gases and water back to the reservoirs, using some of the gas as fuel for the facility equipment (i.e., the gas is not processed for sale). The processing

[7] For wells that are not actively producing, methanol is a material that is injected inside the well bore to keep the downhole fluids from coming into the permafrost zone (where produced water could freeze inside the pipe). This is referred to as "freeze protect" and the pumps used for freeze protect operations are electric pumps; no pneumatic pumps are used.

[8] There are many more drill sites and wells, of course, in the Prudhoe Bay oil field and other units on the North Slope.

facilities are fully manned around the clock, are almost entirely enclosed, and consist of the separators, the equipment necessary to route fluids to their destination, such as pump, turbine-driven compressors, and notably, power generation equipment. The processing facilities, working together, produce only sales quality crude oil, are remote from civilian infrastructure, and must be self-contained. Moreover, because they are all enclosed and manned, liquid and gas leaks cannot be generally tolerated so the facilities (and manifold buildings at the drill sites) contain gas detection equipment that alert operators to leaks so they may be expeditiously repaired. When conditions allow, drill site operators make daily trips to the drill sites to, among other tasks, inspect for leaks so they may also be expeditiously repaired.

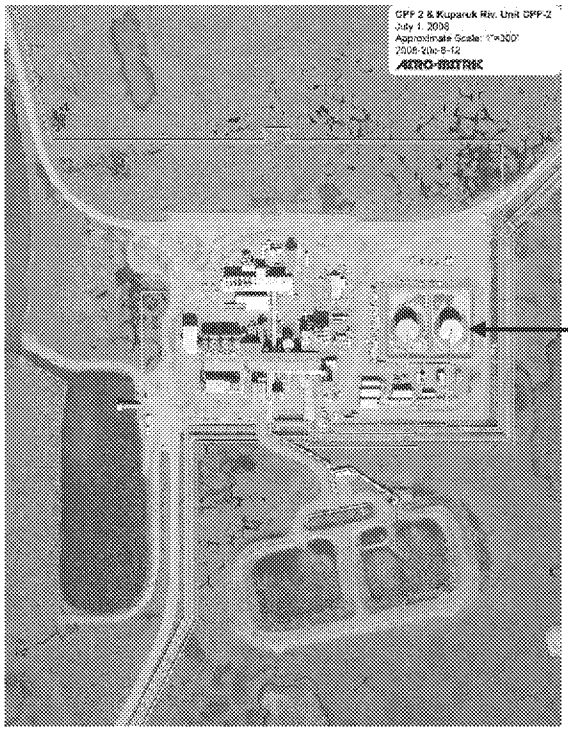

Figure 7: Typical Central Processing Facility

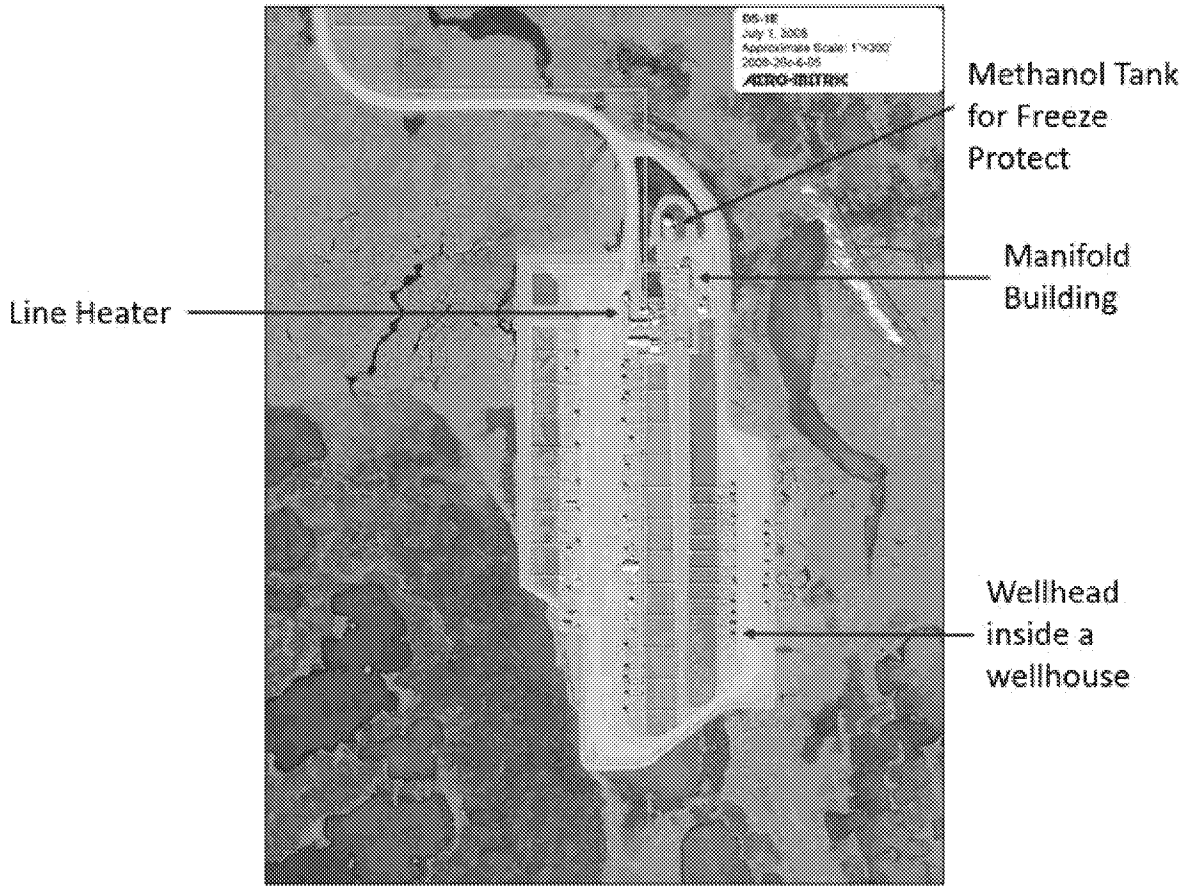

Figure 8: Typical Drill Site Overview

Employees work in shifts on the North Slope, generally two weeks on and two weeks off. They are transported to the facilities via air and are provided room and board while at the facilities.

The production of crude oil in the state of Alaska is regulated by the *Oil and Other Hazardous Substances Pollution Control* provisions found at 18 AAC 75.[9] For oil production facilities, these regulations require, among other things, monthly checks for leaks:

> ***18 AAC 75.080.*** *Requirements for facility oil piping. (a) The owner or operator of an oil terminal, crude oil transmission pipeline, exploration facility, or production facility shall ensure that all facility oil piping associated with that facility meets the requirements of this section.*
>
> ***
>
> *(n) The owner or operator of aboveground facility oil piping and valves must ensure that the piping and valves are*
>
> *(1) visually checked for leaks or damage during routine operations or at least monthly, and*
>
> *(2) appropriately protected from damage by vehicles.*

[9] Title 18 of the Alaska Administrative Code, Chapter 75:
https://dec.alaska.gov/commish/regulations/pdfs/18%20AAC%2075.pdf

Since all production fluid piping on the North Slope is above ground (except for the welded pipe under road and pad crossings) and that produced gas and oil piping are routed together, this means all the piping, whether in produced fluid or gas service, is checked for leaks at least monthly. Different operators have different schedules for adhering to this requirement, with some doing it even more frequently than monthly, but it is safe to say that these checks are conducted much more frequently than the semi-annual checks required by the proposed OOOOa. When methane leaks are detected during these checks, workers are instructed to generate work orders so they may be investigated and repaired. Leak detection and repair are an integral part of North Slope oil production operations.

Technical, Logistical, and Commercial Infeasibility of Applying the Proposed Scheduled LDAR Requirements to the North Slope of Alaska

There are four major issues with applying the proposed and scheduled LDAR requirements on Alaska's North Slope:

- Optical gas imaging (OGI) cameras are specified to work in temperatures above -4°F;
- Performing methane leak detection at each of our 50+ drill sites and 1,700+ wells on a rigid schedule will be challenged by meteorological conditions;
- Completing repairs of methane leaks in the time allotted by the proposed rule will be at times infeasible, setting us up for situations of non-compliance; and
- The commercial impacts associated with repairing leaks that require more than 15 days to fix could be excessively burdensome.

According to FLIR Systems, Inc., the optical gas imaging cameras' operating temperature range is from -4°F to 122°F. This manufacturer does not offer any gas imaging cameras designed to operate in temperatures below -4°F. From Figure 1, it is seen that temperatures below -4°F are obviously a common occurrence on the North Slope, rendering wintertime LDAR activities technically infeasible since not all enclosures are heated, and most above-ground piping is exposed. In addition, our experience indicates that attempts to perform methane leak detections activities using the OGI technology in wind speeds greater than 8 miles per hour produces unreliable results.

Further, Figures 1 and 2 (temperature and wind plots), and the fact that there is typically snow on the ground from September to June, show that the proposed methane leak detection schedules can only reliably be carried out in the summer months. The new rule should not impose a methane leak detection schedule that is known to be impractical to meet.

The proposed repair deadline of 15 days also poses a problem. Though a large inventory of spare parts is maintained on the North Slope, it is neither practical nor possible to keep on hand all the parts that may conceivably be needed to repair a future methane leak. Some repairs might thus require parts to be purchased and shipped in from outside the North Slope. Figure 3, the plot of Deadhorse airport flight rule categories, shows that getting the parts on a reliable schedule (i.e., within 15 days), no matter the time of year, is not a given. We acknowledge that the proposed rule allows more time to repair the methane leak if repairing it with 15 days is "technically infeasible or unsafe" but are not certain that flight delays would fit into this extension allowance. Thus, again, we foresee difficulty in complying with the rule as proposed.

In some cases, methane leaks on North Slope facilities would inarguably be "technically infeasible or unsafe" to repair in 15 days, in which case the proposed repair deadline of six months or the next scheduled shutdown, whichever is sooner, would apply. But even that extended deadline imposes a disproportionate burden on the North Slope, especially for minor leaks, and would in some cases cause more emissions than it would prevent. Some leaks may require a shutdown to repair and, if a shutdown is not already scheduled within six months of detecting the leak, then a previously unscheduled process shutdown will have to occur.[10] A process shutdown is a time consuming, labor intensive, expensive, and broadly impacting endeavor. For example: pipelines must be de-inventoried and surveyed, gas will be flared, diesel engines will have to be started to provide utilities (because the facilities normally run off natural gas separated from the oil), gas-fired equipment will have to be shut down and subsequently started up, and wells will be shut in (ranges from 250 to 535 wells depending on the facility). The emissions associated with this gas flaring, diesel use, and equipment shutdown-startup cycle are much greater than the emissions resulting from methane leaks. We do not believe this scenario is consistent with the proposed rule's goals.

Moreover, royalties and taxes on North Slope oil production is the major revenue stream to the State of Alaska, which would be significantly and adversely affected by any previously unscheduled shutdowns for the purpose of repairing methane leaks, even minor ones. CPAI produces sales quality crude oil from its production facilities, and production volume varies by facility. If a processing facility was to engage in a previously unplanned shutdown to perform fugitive emission leak repair, lost production revenue would range from a gross of $2.6 million to $5.2 million per day (based on a crude oil price of $50/bbl) depending on which facility was shut down. If a drill site must be shut down to repair a leak, the gross lost revenue could be in the hundreds of thousands of dollars per day. We do not believe economic impacts this large are either contemplated by or warranted by the proposed OOOOa.

In sum, oil production on the North Slope is distinct from production elsewhere in the United States. The facilities are inter-connected and flow to a single pipeline that routes all the produced crude oil from the North Slope to market, there are dozens of wells at each drill site, most of the facilities are enclosed and manned around the clock, and the operations occur in the context of logistical and climatological challenges that are unique. Given this, as well as the aggressive leak detection and repair programs already in place on the North Slope, we request that the prescriptive LDAR requirements found in the proposed OOOOa rule be made explicitly not applicable to Alaskan North Slope oil production facilities and drill sites. Compliance with the rule is impractical and unduly costly, and there are other measures in the place on the North Slope that would make any benefit of complying with the proposed rule requirements either negative or small.

[10] ConocoPhillips performs planned shutdowns of its facilities every three years. These are intricately planned activities that require up to a year of planning along with coordination with the many other facilities that feed into the oil pipeline leaving the North Slope. For example, an unplanned shutdown of CPF2 could cause production and environmental impacts at the Alpine facility which routes its production through CPF2.

Prior EPA Decisions around Applying LDAR Requirements to North Slope Facilities

EPA has previously recognized the difficulties in applying prescriptive LDAR requirements to the facilities on the North Slope of Alaska. Because of these difficulties, exemptions from prescriptive LDAR requirements appear in the following rules:

- 40 CFR 60, Subparts GGG and GGGa: Standards of Performance for Equipment Leaks of VOC on Petroleum Refineries
- 40 CFR 60, Subpart KKK: Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants
- 40 CFR 60, Subpart OOOO: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution (exemption only for Natural Gas Processing Plants)
- 40 CFR 63, Subpart HH: National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities (exemption only for Natural Gas Processing Plants)

The basis for the exemptions was first seen in the preamble for GGG. EPA wrote:[11]

> *EPA has studied the commenter's concerns and acknowledges that there are several unique aspects to refining in the North Slope of Alaska. Accordingly, EPA concluded that the costs to comply with the routine leak detection and repair requirements of the proposed standards may be unreasonable. These operations incur higher labor, administrative, and support costs associated with leak detection and repair programs because: (1) They are located at great distances from major population centers, (2) they must necessarily deal with the long-term, extremely low temperatures of the arctic, and consequently (3) they must provide extraordinary services for plant personnel. These unique aspects make the cost of routine leak detection and repair unreasonable (Document Number IV-B-15). Therefore, EPA has decided that refineries in the North Slope of Alaska are exempt from the routine leak detection and repair requirements of the standards.*

This view is evidently carried forward into the proposed OOOOa rule since Alaskan North Slope Natural Gas Processing Plants are exempted at §60.5401a(e) from the same LDAR provisions the above listed rules require. Since the climatological and logistical conditions that exist at the Natural Gas Processing Plants are the same as those at the surrounding drill sites and production facilities, the drill sites and production facilities should also be exempted from the prescriptive monitoring requirements and repair schedules.

[11] 49 FR 22598, May 30, 1984

Language that Requires Clarification

1. The well site exemption for fugitive emissions found in §60.5365a(i)(2) states:

> *"A well site that only contains one or more wellheads is not an affected facility"*

In the proposed rule preamble at 80 FR 56611, EPA states this definition is meant to exclude from LDAR requirements "well sites that contain only wellheads." We are not certain any such producing well site exists on the Alaskan North Slope. Rather, because of the remote nature of our operations, the need to freeze protect, and the number of wells we may have on a pad, there is nearly always more than just wellheads at a well site. But, with few exceptions, there is also no processing or production fluid storage that takes place at a well site. EPA makes clear on the same page of the preamble that they want to include in the LDAR requirements those well sites that contain "ancillary equipment such as storage vessels, closed vent systems, control devices, compressors, separators, and pneumatic controllers." In ConocoPhillips' Alaska North Slope operations, there is only one such site. The rest of our drill sites contain, along with the wellheads, mainly electrical modules, manifold buildings, line heaters, and small methanol tanks for freeze protection.

It appears EPA, in the §60.5365a(i)(2) exclusion, wants to ensure no well sites that engage in any processing or storage of production fluids enjoy the exemption. If our understanding of this is correct, we suggest the exclusion language would be much more clear if worded as follows:

> *"A well site that only contains one or more wellheads or that does not process (i.e., separate) or store any sales quality produced fluids is not an affected facility."*

2. It is not entirely clear how broadly EPA intends the phrase "compressor station site" to be applied but, as defined in proposed OOOOa, it could be applied in a manner that could cause oil production facilities to be included (these compress gas for reinjection into reservoirs). We don't think this is the intent. As such, we propose the definition be amended to make it consistent with the definition of "onshore natural gas transmission" found at 40 CFR 98.230(a)(4) as follows:

> *"Compressor station site means any permanent facility whose primary function is to compress and move gas at increased pressure via a combination of one or more compressors ~~that move natural gas at increased pressure~~ out of a production field, out of a natural gas processing plant, or other transmission compressors through transmission pipelines to natural gas distribution pipelines, LNG storage facilities, or into underground storage. ~~through gathering or transmission pipelines, or into or out of storage. This includes, but is not limited to, gathering and boosting stations, and transmission compressor stations.~~"*

Similarly, use of phrases like "gathering and boosting station" and "transmission compressor station" without definition will cause uneven application of the rules.

3. The definition of "well site" is confusing as it could be read to include production facility pads that contain no producing wells. We do not believe EPA intends this outcome but the matter could be clarified by including in the definition language that explicitly states production pads that contain no producing wells are not considered well sites.